

What is claimed is: WHAT IS CLAIMED IS:

1. A diode having a semiconductor substrate situated between two metallic electrodes (5,6), the substrate being highly doped in a first zone (3) in order to form an ohmic transition to the first electrode (6), and being weakly doped in a second zone (1) having the same conductivity type, in order to form a rectifying transition to the second electrode (5), wherein both zones (1,3) are separated by a third zone (2) of the semiconductor substrate, the third zone, having the same conductivity type, being doped more weakly than the second zone (1), and the second zone (1) is enclosed between the second electrode (5) and the third zone (2).

2. The diode according to Claim 1, wherein the breakdown voltage between the second electrode (5) and the third zone (2) is at least three times as great as that between the second electrode (5) and the second zone (1).

3. The diode according to Claim 1 or 2, wherein the second zone (1) is raised over the surface of the third zone (2), and the second electrode (5) covers the second zone (1) in the manner of a hat, and has a circumferential rim (10) that touches the third zone (2).

4. The diode according to Claim 1 or 2, wherein the second zone (1) is fashioned in planar and island-type fashion on the surface of the third zone (2), and the second electrode (5) is flat and touches the third zone (2) in an edge region (11).

5. The diode according to one of the preceding claims, wherein an insulating layer (8) is formed on the surface of the third zone (2) surrounding the second zone (1), and the edge of the second electrode (5) touches the insulating layer (8).

6. The diode according to one of the preceding claims, wherein at least one of the electrodes (5,6) is applied to an oxide-

free surface of the semiconductor substrate.

7. The diode according to one of the preceding claims, wherein the semiconductor substrate is Si or SiC.

8. A method for manufacturing a diode, in particular according to one of the preceding claims, wherein, on a surface of a third zone (2) of a semiconductor substrate that includes a strongly doped first zone (3) and the third zone (2) having weak doping and the same conductivity type, a second zone (1) having the same conductivity type and having stronger doping than that of the third zone (2) is produced, and, on the surface, a metallic electrode (5) is deposited that encloses the second zone (1) between itself and the third zone (2).

9. The method according to Claim 8, wherein the second zone (1) is produced on the overall surface of the third zone (2), and is subsequently eroded locally in order again to expose the third zone (2) locally.

10. The method according to Claim 8, wherein the second zone (1) is produced through epitaxial layer growth.

11. The method according to Claim 9 or 10, wherein the local erosion includes a sawing using a circular saw.

12. The method according to Claim 9 or 10, wherein the local erosion includes a masking and etching.

13. The method according to one of Claims 8 through 12, wherein the electrodes (5,6) are deposited through sputtering.

14. The method according to one of Claims 8 through 13, wherein the surface of the semiconductor substrate is made oxide-free through sputtering before the depositing of the electrodes (5,6).

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